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January 11, 1958

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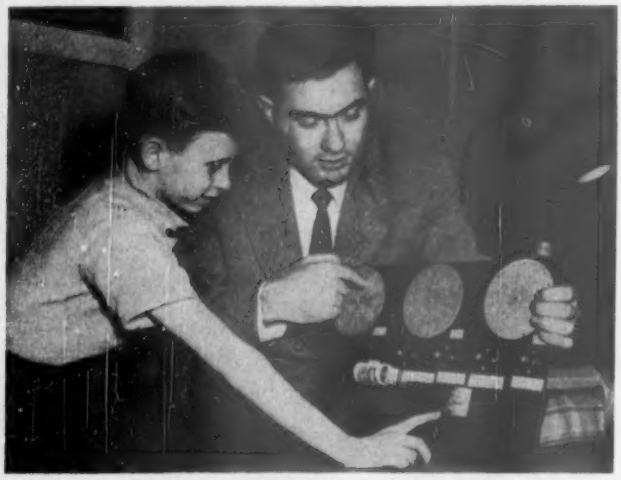
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

Heart Action

See Page 28

A SCIENCE SERVICE PUBLICATION



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MANPOWER

Biologists' Morale Down

The shortage of qualified, trained scientists is not limited to one science, reports a group of biologists. Discriminating against biologists can injure our national prestige.

➤ THE NATION'S biologists are fighting mad at the U. S. Civil Service Commission.

In a letter to President Eisenhower, Dr. Hiden T. Cox, executive director of the American Institute of Biological Sciences, charged that the Commission is making biologists into second-class scientists, destroying morale, and seriously injuring the national defense effort.

The biologists are up in arms because the Commission has announced pay increases for scientists employed by the Federal Government but excluding some 28,000 biologists on the Federal payroll. The pay boosts went to physicists, mathematicians, engineers, some chemists and a number of technologists.

Conspicuously missing from the Christmas list were biologists, agriculturists and bacteriologists.

Protests by biologists have already resulted in the first faint reappraisal, Dr. Cox noted, and the Commission is currently studying the availability of biologists and the salary scales paid by industry and academic institutions.

Only four months ago, at the AIBS annual meeting in Palo Alto, Calif., Dr. H. Bentley Glass of Johns Hopkins University, Baltimore, Md., predicted in the principal address that biologists are on the verge of discoveries equal to the "revolutionary and potentially devastating kind" that led to the production of atomic weapons and intercontinental missiles. (See SNL, Sept. 7, 1957, p. 157.)

In Dr. Cox's letter to the President, which was also sent to Dr. James R. Killian; the Secretaries of Defense, Agriculture, Commerce, Health, Education and Welfare, and Interior; the Chairman of the Civil Service Commission; and the Chairmen of the House and Senate Committees on Civil Service, Government Operations and Agriculture, it specifically charged:

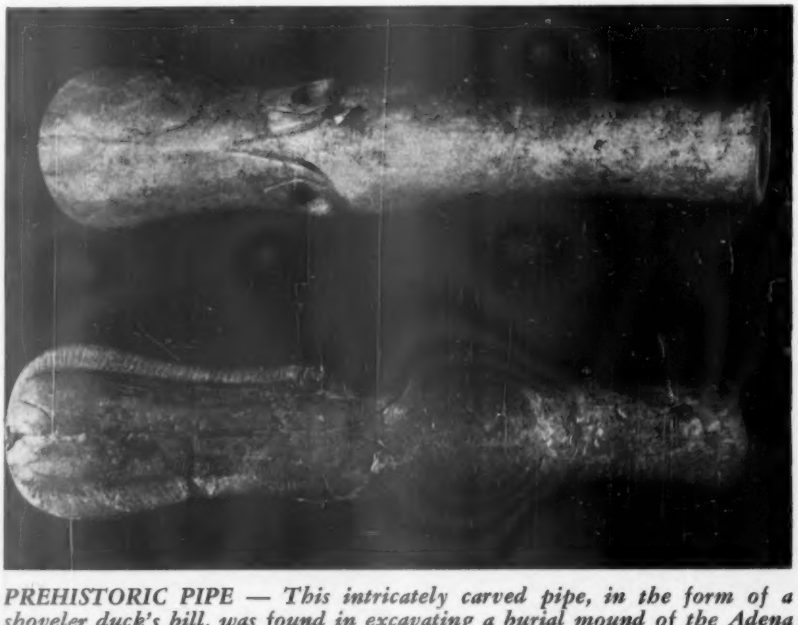
1. Although there may be no serious quantity shortage of biologists at present, there are growing shortages in some areas and shortages of qualified persons in almost all areas.

2. The Civil Service Commission action is discriminatory and makes second-class scientists out of biologists. The discrimination is not only financial, but against the prestige and importance of biologists.

3. A lowering of morale among Federally employed biologists is already evident.

4. The effect of the Commission's action promises to seriously injure the future recruitment of promising biology students.

5. Science must advance in all fields, not in just a few. Artificially stimulating certain areas, even for political expediency, is extremely shortsighted.



PREHISTORIC PIPE — This intricately carved pipe, in the form of a shoveler duck's bill, was found in excavating a burial mound of the Adena Indians. The fine incised lines representing the lamellae typical of this species of duck's bill can be seen in the bottom photograph of the underside of the bill.

The American Institute of Biological Sciences is composed of 38 biological societies and represents more than 55,000 of the nation's biologists.

Science News Letter, January 11, 1958

ASTRONOMY

Radar Spots Auroras In Southern Hemisphere

➤ RADAR has been used to spot auroras, the shimmering heavenly displays known as the northern or southern lights, for the first time from the Southern Hemisphere, two New Zealand scientists report.

Average height of the auroras, radar echoes showed, is 66 miles above the earth's surface, they say in *Nature* (Dec. 28, 1957). Drs. R. S. Unwin and M. Gadsden of the Department of Scientific and Industrial Research, Awarua Radio, Invercargill, New Zealand, report their observations, part of the International Geophysical Year program, could be correlated with visual auroras only twice because of cloudy conditions.

Science News Letter, January 11, 1958

ARCHAEOLOGY

Early Indian Art Saved From Path of Construction

➤ A PIPE, beautifully carved some 3,000 years ago by prehistoric Adena Indians has been salvaged from the path of the bulldozer through the cooperation of an industrial corporation with the Smithsonian Institution.

The pipe, which is made from Ohio limestone, is in the form of the head and neck of a shoveler duck with characteristic duck bill, eyes and slits for nostrils. A series of fine incised lines on the underside of the bill represent the lamellae typical of the shoveler duck. The limestone from which the pipe is made is relatively soft and easy to carve when freshly dug from the ground. After exposure to the air the stone becomes hard and brittle.

The beautiful pipe was found when a famous West Virginia mound, the Welcome mound, was excavated under the direction of Dr. Frank M. Setzler of the National Museum. The mound lay in the path of industrial development in the rapidly growing industrial area between Wheeling and Huntington, W. Va.

Although a bulldozer could have leveled the 100,000 cubic feet of earth in a couple of days to prepare the ground for new construction, the Columbia-Southern Chemical Corporation recognized that the mound might contain priceless archaeological material and requested the assistance of the Smithsonian.

In addition to the pipe, three adult human skeletons were found buried in the mound. The bodies had been placed on, and covered with, several layers of what appeared to be oak bark. Acidity from the bark had decomposed all perishable objects buried with the dead and even the bones were hardly more than imprints in the earth.

Science News Letter, January 11, 1958

CHEMISTRY

Caution Rocketry Amateurs

Building and firing rockets can be a dangerous hobby. Experts give young rocket enthusiasts a list of do's and do not's to follow and also recommend studying rocket theory.

➤ YOUNGSTERS who feel the urge to build and fire rockets should stick to tested materials available in hobby shops and leave gas pipes and explosive chemicals alone, professional rocket scientists warn.

Rocket engineers and chemists who responded to a SCIENCE SERVICE survey agree their best advice for the youngster is to forget about home-made rockets until they have learned all they can from less spectacular, but safer, projects.

However, the professionals offer these safety precautions:

Obtain close supervision from a competent person. Just because a person is a scientist, the rocket experts say, there is no assurance he is thoroughly familiar with explosives, gas expansion and properties of rocket materials.

Plan each project carefully well in advance of the firing date. Such planning enables experimenters to foresee and overcome difficulties. Also, by knowing the detailed needs of the project, youngsters will have plenty of time to locate safe materials and will not have to make hasty substitutions of unsafe material.

Do not use stove, water or gas pipe for rocket casings. Some of this pipe is designed to hold up under steady pressure, but will burst under sudden pressure or heat. Nearly all pipe commonly available is made with a seam, sometimes hidden, that splits under explosive force. Seamless pipe, which is usually more expensive and harder to locate, must be used.

Distinguish between explosives and rapid-burning fuels. Gunpowder is an explosive. Solid propellants in military rockets are rapid-burning fuels, even though to the casual observer they apear to act explosively. Remember that nearly all rapid-burning fuels are explosives under certain conditions. Learn the conditions. Mixtures of potassium chlorate or potassium nitrate and sugar, powdered zinc and sulfur, powdered aluminum or magnesium and oxidizing agents are always dangerous explosives when ignited in confining containers.

Always fire even "safe" rockets by remote control from behind barricades. All persons in the area must be sheltered. Even a "safe" rocket carrying a light load in a strong container can tip or be pushed by a breeze at the last minute to fire in the wrong direction.

Find a safe range. Even if the rocket fires safely, without exploding, it must come down somewhere. Make sure the range is long enough to accomodate the rocket on its most successful flight, and wide enough to permit deviations from the course caused by breezes or even the smallest warps in fin surfaces.

Make sure local laws permit rocket firing. Some rocketry experts believe legal authorities have every right to call amateur rockets fireworks and ban their use wherever fireworks are banned.

Do not use actual rockets for clubroom or classroom demonstration of rocketry principles. Use balloons or carbon dioxide bottles. In this connection, do not try to improvise from "empty" aerosol cans such as are used for shaving lather, house sprays or whipped cream.

Avoid the use of home-made rockets in projects wherever possible. For example, in testing the flight characteristics of a new fin design, use a small hobby-shop rocket—there will be one less chance of an accident.

Plan projects scientifically to gain scientific knowledge. Such a procedure often shows that the building and firing of a rocket can be eliminated, but the information still gained through safer means.

Rocket Theory Emphasized

Rocketry, including amateur efforts, has become so advanced that student enthusiasm must be directed away from mixing fuels and firing rockets and channeled into the more important study of theory, say Cmdr. Robert C. Truax, president of the American Rocket Society, and Donald W. Patterson, director of the Office of Guided Missiles Activities of the Assistant Secretary of Defense for Research and Engineering.

Cmdr. Truax, Ballistics Missiles Division, Air Research and Development Command, Inglewood, Calif., recently analyzed and suggested a safe, but powerful steam-powered rocket that eliminates mixing and transporting explosive fuels. He told SCIENCE SERVICE the amateur rocket, which should reach altitudes of five to ten miles, resulted from a desire to protect his 15-year-old daughter and her young friends who are rocket enthusiasts.

The rocket would consist of a metal shell similar to those used for explosive-filled rockets, but contain water and an empty space in which steam builds up to supply pressure for thrust. The shell is fitted with a nozzle and plug, stopcock or automatically popping safety valve set for high steam pressure. It would be launched from a ramp containing a heater to convert the water to steam.

Mr. Patterson, whose office maintains a technical review of most military guided missiles, told SCIENCE SERVICE: "It is inconceivable, in view of the top talent and almost unlimted facilities available to our rocket and missile program, that an amateur effort would result in any worthwhile design or fuel formulation not already considered officially, but I think student and amateur efforts must continue and their support is justified on the basis of training future scientists."

However, Mr. Patterson said, for this training to be worthwhile it must be in science fundamentals and basic rocketry techniques, and should not be allowed to "degenerate into fireworks displays." The principle of rocket reaction, he said, can be demonstrated by releasing air from a balloon.

The question of where student and

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amateur rocketry groups can fire their home-made rockets has been answered by spokesmen for the Armed Services.

All three military branches are encouraging well-supervised rocketry groups at local levels and such groups will be welcome at many military installations. However, there are some strings attached.

Groups requesting permission to launch rockets from military bases must be well-organized under the close supervision of competent persons, and must demonstrate a bonafide interest and knowledge in the fields of science that comprise rocketry.

Amateur groups merely wanting to "put something in the air" or conduct "fireworks displays" can expect to be denied permission to use military facilities by local base commanders upon whose authority the decisions rest.

Amateurs Use Military Bases

Students and amateurs must not expect the use of military tracking facilities and personnel. About all a local commander can offer is safe space and any barricades that might exist, such as those found on a rifle firing range. However, space and barricades are the two most elusive items on a rocket club's "must" list.

In all three services the decision to deny or admit rocketry groups to military bases must be made by the base commander. None of the services has an overall policy on the matter, but each is committed to maximum cooperation with local civilian groups without changing the nature of the post.

The Army comes closest to a formal general policy in its Army Regulation 360-55, which authorizes commanding officers to develop and promote ways in which members of their commands can participate in local civilian activities.

By direction of Congress, the Army cooperates, even to the point of some financial subsidy, with such groups as the Boy Scouts, Civil Air Patrol and National Rifle Association. So far there is no Congressional directive covering rocketry groups, but Pentagon spokesmen feel the spirit of the law is sufficient authorization to cooperate without financial aid.

Army spokesmen said well-supervised rocket clubs conducting planned programs for scientific knowledge already have been allowed to fire from many posts. Even the security-conscious White Sands, N. M., installation has welcomed amateur groups during free time from military projects and after ample notice to security officers.

Air Force and Navy commanding officers operate under general policies of "cooperation with the public," but at present do not have any clear-cut directives concerning rocket clubs. However, spokesmen for both services said that qualified rocket clubs should have no difficulty in obtaining permission to use any facilities that might be available.

The Air Force makes it clear that amateur rocket groups should not expect to use the guided missile test facilities at Cape Canaveral, Fla.

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PUBLIC HEALTH

Flu Danger Still Present

➤ THE NATION still faces the danger of more influenza.

Experts agree that things look quiet now but they have their own opinions about the chances of another wave of the illness sweeping the United States. Some say probably yes; some say probably no. All admit that they can only speculate about it.

In the Far East, a second epidemic due to Asian flu apears to have reached its peak in most areas. The spots that were missed during the first wave last May and June are the ones being hardest hit this time. The same thing could happen here. There is no indication, however, that it will at the present time.

Vaccination with the new 400 CCA vaccine (CCA stands for chicken cell agglutination unit and is a measure of the vaccine's potency) is still strongly recommended by the U. S. Public Health Service. This is especially true for high risk groups such as elderly people with heart and lung diseases.

If you have already had the Asian flu your worries are over since only a very few cases have been reported where one person suffered the illness twice. Generally it leaves the individual with a higher degree of protection than he can get from any vaccine.

All the vaccine now being produced and used is the new 400 CCA type. This has twice the strength of the earlier 200 CCA vaccine and has been required from all the manufacturers since Dec. 1, 1957.

The new 400 CCA vaccine is reported to be 80% to 85% effective while the older 200 CCA type was thought to be 60% to 70% effective.

At the time the vaccine was first manufactured, the pharmaceutical companies were unable to get the virus to grow as fast as they wanted. The 200 CCA vaccine was the best they could get then, so it was put on the market to supply the mushrooming demand.

As time went on, the virus began to grow much better and a 400 CCA vaccine became practical. This has now been adopted as the standard potency.

Vaccine manufacturers are slowing down production somewhat since the available supplies are expected to be able to meet present needs.

From a financial standpoint, the manufacturers are much safer with excess flu vaccine than they were with the unused polio vaccine. Two big reasons are the dating on the products and the difference in production time and cost.

The flu vaccine is good for 18 months so it can be kept on hand for use again next year. Polio vaccine on the other hand has to be destroyed after six months.

In addition, the flu vaccine can be made in about 50 days, whereas the polio vaccine requires seven months. On the whole, the companies are not anticipating the need to destroy much of their flu vaccine.

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ASTRONOMY

1958 Big Satellite Year

➤ NEW LAUNCHINGS of man-made earth satellites, both by Russia and United States, three eclipses and a relatively "close" approach of Mars highlight the astronomical events for 1958.

Landing a rocket on the moon, within present capabilities of both U. S. and Russia, is also a possibility.

Although some astronomical events can be predicted, others happen unexpectedly, so 1958 may see the appearance of one or more naked eye comets, just as 1957 had three.

Because of the total eclipse of the sun, occurring on Oct. 12, the day was selected by International Geophysical Year authorities as a day on which many extra observations of all kinds will be made. It is also the day of a new moon, and one on which the extra "shooting stars," or meteors, of the Orionid shower should start to appear.

Although there may still be snow on the ground in many parts of the country, spring will arrive March 20 at 10:06 a.m. EST, astronomers at the U. S. Naval Observatory here have calculated. Official beginnings of the other seasons are summer, 4:57 p.m. EST on June 21; autumn, 8:10 a.m. EST on Sept. 23; and winter, 3:40 a.m., EST on Dec. 22.

During 1958 a special program of visual meteor observation is being conducted in connection with the International Geophysical Year. Instruction and report forms are available from the IGY Meteor Center, National Research Council, Ottawa, Canada.

Ten other meteor showers with observing rates from 12 to 40 an hour are scheduled for 1958, including the Aurigids on Feb. 10 with 12 an hour and the Ursids on Dec. 22.

Science News Letter, January 11, 1958

● RADIO

Saturday, Jan. 18, 1958 1:30-1:45 p.m., EST

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio network. Check your local CBS station.

Dr. James A. Reyniers, research professor of bacteriology, University of Notre Dame, Notre Dame, Ind., will discuss "The Need for Technicians."

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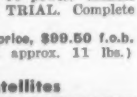

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ASTRONAUTICS

Space Agency Needed

A National Space Establishment, with an appropriation of ten billion dollars to be spent within the next ten years, could give the United States the lead in the space race.

➤ TO LEAD in the race for space, the United States should set up a National Space Establishment soon, and give it ten billion dollars to spend in the next ten years.

With such a vigorous national effort, the U. S. could hit the moon by rocket in one year, put a manned earth satellite into orbit in five, 27 of the country's top rocket and satellite experts agree. They are members of the independent Rocket and Satellite Research Panel.

(Watson Davis, director of SCIENCE SERVICE, in his science forecast for 1958 said: "A rocket may reach the moon in 1958, not a man-carrying space vehicle but a more modest missile.")

The panel's proposal was submitted through the chairman, Dr. James A. Van Allen of the State University of Iowa. It cites ten goals that could be achieved with such a unified program:

1. An intensified program of scientific soundings with high-altitude rockets, immediately.

2. An intensified program of scientific and technical developments with small instrumented satellites of the earth, immediately.

3. Impact on the moon with non-survival of apparatus, by 1959.

4. Placing an instrumented satellite in an orbit about the moon, by 1960.

5. Impact on the moon with survival of scientific instruments, by 1960.

6. Returnable, manned satellites in flight around the earth, by 1962.

7. Manned circumnavigation of the moon with return to the earth, by 1965.

8. Manned permanent satellite, by 1965.

9. Manned expedition to the moon by one or two men, by 1968.

10. Manned expedition to the moon by a sizable party of men, by 1971.

Main points of the proposal have been discussed with Dr. James R. Killian, chairman of President Eisenhower's Scientific Advisory Committee, Dr. Van Allen said.

The panel concluded the program should be run by an independent agency so that its work can be "freely directed toward broad cultural, scientific and commercial objectives.

"Such objectives far transcend the short term, though vitally important, military rocket missions of the Department of Defense."

However, the panel said, if creation of the recommended independent agency would require "an intolerable delay," then the program could be guided by the Secretary of Defense, but not within the jurisdiction of any of the military services.

Calling the exploration and eventual habitation of outer space "the finest examples of the 'Endless Frontier'," the panel said the program would yield a "rich and continuing harvest of important practical applications as the work proceeds."

Among the returns that can already be foreseen, the proposal cited more reliable short-term and long-range weather forecasts, with all the agricultural and commercial advantages that these imply; rapid, long-range radio communications of great capacity and reliability; aids to navigation and to long-range surveying; television relays; new medical and biological knowledge, etc."

Science News Letter, January 11, 1958

METEOROLOGY

Change in the Weather Foreseen by Bureau

➤ THERE will be a change in the weather. That is the aim of studies the Weather Bureau is starting this year, Dr. F. W. Reichelderfer, Bureau chief, told SCIENCE SERVICE. One plan is to see if there is some way tornadoes can be destroyed before they become full-fledged.

The tornado-modification program is under the Bureau's newly created office of experimental meteorology, headed by Dr. Ferguson Hall. It will also include a search for methods of changing the paths of tornadoes.

These studies, and many others concerning basic studies of the weather, will be coordinated with an expanded program of meteorological research expected when and if the House of Representatives passes the Senate-approved bill, S-86. This bill would place responsibility for all weather modification research with the National Science Foundation.

Its passage was urged by President Eisenhower's Advisory Committee on Weather Control, which completed its four-year existence on Dec. 31, 1957. The committee also recommended that the Government put more money and more effort into meteorological research, sponsoring "talented men as well as their specific projects."

The fields that should be pursued vigorously, the committee said, include the effects of solar disturbances on weather, factors controlling global atmospheric circulation, the birth and movement of large-scale storm systems, cloud motions, rain and snow formation, electricity's role in weather processes, natural sources of condensation and ice-forming nuclei, and methods of weather modification.

Science News Letter, January 11, 1958

A silicon-germanium *diode*, used in guided missiles, is no larger than a match tip.

PRESIDENT-ELECT — Dr. Paul E. Klopsteg, associate director of the National Science Foundation, Washington, has been named president-elect of the American Association for the Advancement of Science at its meeting in Indianapolis, Ind. A physicist, Dr. Klopsteg is known as a science teaching expert.

MEDICINE

Histamine Lessens Radiation Damage

➤ HISTAMINE, the powerful blood vessel dilator, may actually be protecting the body from radiation death, rather than increasing the damage done by radiation, as has been thought.

This discovery is reported by Dr. H. A. S. van den Brenk, Cancer Institute Board, Victoria, Australia, in *Nature* (Dec. 28, 1957).

Rats in which the amount of histamine in some tissues had been reduced to less than 10% of its normal value showed a much higher death rate than control animals when both received heavy doses of whole body radiation.

Seven days after irradiation all the histamine-depleted animals had died, while 60% of the control rats were still alive, the researcher reported.

A similar protective effect from histamine was noted when the radiation was given to only a small area on the skin. Histamine-depleted animals developed radiation changes in the skin significantly earlier than controls, the skin rash was more intense and the final tissue damage was considerably increased.

These results indicate that radiation death and damage cannot be satisfactorily explained on the basis of histamine release, as has been thought.

In fact, they suggest just the opposite, that lack of available histamine results in a lessened protection for the animal to irradiation damage, Dr. van den Brenk concludes.

EDUCATION

Propose Scholarship Test

A national plan for expanding science education would provide some 10,000 college scholarships on the basis of need and the results of a psychological test.

➤ NOT EVERY high school student will have to take a psychological test under the Eisenhower plan for expanding science education. But there will be great pressure upon bright boys and girls to qualify for some 10,000 college scholarships worth approximately $3,000 ($750 a year) provided that father does not have the money to send his child to college.

There will be a gigantic testing program, administered by states that wish to do so and will put up 50% matching money. There will be a bolstering of the career guidance services advising students.

There probably will not be uniform tests nation-wide. In some states students will win scholarships that they could not get in other states where the educational level is higher. The tests will be more to determine general intelligence than scientific and technological abiltiy, for while there will be preference specified for those well-grounded in mathematics and science the students interested in other fields will not be eliminated.

The tests will probably be given to students in the junior year of high school or earlier, although the scholarships would be awarded only to seniors ready for college.

It will cost about $2.50 to give each test and a half-dozen private testing organizations will be eager to help the various states do the testing job.

The new Federal-state scholarship program would have little influence and will not interfere with the pioneering National Science Talent Search for the Westinghouse Scholarships, conducted by SCIENCE SERVICE, now in its 17th year. Due to the high prestige of this selection procedure and the fact that scholarships are not contingent upon need, there will still be keen competition for these honors, even if the plan is implemented by Congress. The National Merit Scholarship and other such programs should continue unabated as a supplement to the proposed new plan.

The proposed 1,000 Federal graduate fellowships for prospective college teachers should bolster the instructional staffs of colleges for the flood of students caused by the scholarship program. Matching funds will allow states to reinforce their science and mathematics teachers.

The funds ($64,500,000) to be allocated to the National Science Foundation are expected to augment the present program to improve quality of research, training and teaching in the sciences.

Viewed as an emergency program, the program would cost about $1,800,000,000 over the next four years with considerable additional matching expenditures by the states.

PUBLIC SAFETY

Fallout Danger in North

➤ PERSONS living in the northern tier of states in the United States and in other temperate latitudes of the Northern Hemisphere are exposed to greater amounts of fallout of radioactive strontium-90 than those living nearer the equator.

Lester Machta, U. S. Weather Bureau specialist in fallout distribution, reported that much of the deadly debris from H-bomb tests in the Pacific "still, literally, hangs over our heads."

The strontium-90 is stored in the stratosphere, which starts at about 40,000 feet above the earth's surface, he told the American Association for the Advancement of Science meeting in Indianapolis, Ind.

There are three classes of fallout, Mr. Machta reported.

Local, or close-in, falls to the ground within the first 24 hours of atomic or hydrogen bomb explosions. Intermediate, or tropospheric, fallout is deposited largely within the first 60 days, mainly with rain or snow.

The third is delayed, or stratospheric, and takes many years to sift earthward. This fallout is composed of very fine particles injected into the stratosphere at the time of the explosion.

Air in the stratosphere mixes very slowly. Motions there can be traced in three ways, Mr. Machta said, by humidity changes, ozone concentrations and radiation balance.

The meteorological picture of the stratosphere calls for a seasonal variation in the poleward motion because the greatest heat loss occurs during the polar winter. Stratospheric air sinks downward only in the temperate or polar regions.

The bulk of long-lived fallout materials such as strontium-90 in the temperate latitudes appears to come from the stratosphere. More deposits in the spring than in the fall.

Although predicting long-term fallout patterns is not very accurate, Mr. Machta said, this problem is "dwarfed" by the uncertainties concerning the biological effects of strontium-90. This radioactive chemical is taken up by the body just like calcium and is deposited in bones.

GEOPHYSICS

Gravity Measurements Made on Sea Surface

➤ THE FIRST successful gravity measurements from the open ocean surface have been made from a surface ship by Dr. J. Lamar Worzel of Columbia University's Lamont Geological Observatory, New York.

The measurements were part of a program to chart gravity variations throughout the world during the International Geophysical Year, which ends Dec. 31, 1958.

To make the unprecedented readings, Dr. Worzel used a sea gravimeter recently developed by Anton Graf of Munich, Germany. It was mounted on a gyro-stabilized platform installed aboard the U.S.S. Compass Island. Previously, gravity values for ocean areas were measured from submarines submerged to quiet depths.

The difficulty of obtaining and fitting submarines for this purpose resulted in very sparse gravity data for the 80% of the earth's surface covered by water.

Gravity measurements are used to determine the earth's shape, the true direction of its center and the density of material in the top layers. When gravity and seismic readings are used together, the thickness of the earth's crust can also be determined.

Science News Letter, January 11, 1958

INVENTION

Devise Collision Device To Cut Traffic Accidents

➤ TRAFFIC ACCIDENTS due to poor visibility caused by fog, rain or snow, could be reduced if motorists equipped their automobiles with a collision warning device being developed.

The radar-like "proximity warner" would tell a driver another vehicle was near even though the potential hazard could not be seen. It consists of a small radio transmitter and a receiver, each about the size of a cigar box. Projecting from each unit is a special ferrite antenna array that sends out and picks up radio signals reflected from approaching vehicles.

The device would be mounted immediately behind the front grill work of the automobile with the antennas projecting forward, so placed as to improve the grill's appearance.

Connected to the receiver unit, but located in a prominent position on the dashboard, would be a large red light or buzzer to warn the driver of another vehicle's approach. The entire system could be set up to indicate any failure to operate, so it would be "fail safe."

Its inventor, Dr. Richard B. Schulz of Armour Research Foundation, Chicago, suggests a "packaged unit" might be rented at toll booth stations along turnpikes, then surrendered at exit.

In quantity production, Dr. Schulz estimates, the device would cost somewhat less than a conventional automobile radio receiver.

It would operate in the frequency range of 50 to 100 kilocycles. The continuous radio energy would be sent out by the ferrite rod, reflected from the metallic surface of a car in its path, then received to actuate another signal that would sound the warning indicator.

The device is based on the induction field principle. Such a setup would operate effectively over a distance of 100 feet, or about six car lengths. Although this distance is not great, it should reduce "pile-ups" in fog. The system does not measure distance directly, but only the presence or absence of a conducting object.

The same principle could be used for geophysical exploration, Dr. Schulz has found. It would help spot ore deposits, rock strata, water tables, underwater salt domes and other physical features of interest in geophysical, mining and civil engineering applications.

Science News Letter, January 11, 1958

MEDICINE

Germ-Free Mice Found Immune to Cancers

➤ SIX GENERATIONS of mice that are normally highly susceptible to cancer, have been kept completely free from the disease by maintaining them in a germ-free condition.

This was reported by Drs. James A. Reyniers and Miriam R. Sacksteder, University of Notre Dame, Notre Dame, Ind., to a conference on Hodgkin's disease meeting in New York.

The experiment is still underway but so far 313 mice kept germ-free have not developed a single tumor. Other mice, closely related but not kept under germ-free conditions, almost always develop cancer, Dr. Reyniers reported.

The cancer-free animals were all descended from a litter of six females and one male that were taken from their mother by caesarian surgery done under germ-free conditions. Then they were nursed by a second generation germ-free mother belonging to a strain of mice strongly resistant to cancer.

From then on, the experimental mice remained in a completely sterile atmosphere and were fed only sterilized food.

Other mice of the same strain received the same treatment except that they were not kept in a germ-free environment. Although they were reared in the same type of container and fed the same sterilized food, 90% developed mammary cancer by the time they were 11 months old, and by the 18th month 98% had developed it.

Dr. Reyniers warned, however, that final conclusions about cancer, or even about mammary cancer in mice, cannot yet be drawn from the experiment, even though the mice are still cancer-free.

The causative factor for cancer may only be dormant, and this dormancy may later be broken by stress and genetic accidents, he said.

Dr. Reyniers suggested that germ-free research techniques might be useful in studying the cause of Hodgkin's disease. This disease is always fatal, and causes cancerous enlargement of the lymph nodes of the body.

Science News Letter, January 11, 1958

IN SCIENC

EDUCATION

College Enrollments Hit an All-Time High

➤ COLLEGE enrollments are up again for the sixth year in a row. They promise to climb even higher when schools enroll second semester students during spring registration.

A record 3,068,000 students were attending the nation's 1,890 colleges and universities in the fall of 1957, the Office of Education has reported. This is a 4.1% increase over the fall 1956 record registration.

During the remainder of the school year, Commissioner of Education Lawrence Derthick predicted, the number will climb to an all-time high of approximately 3,460,000 students.

Dr. Derthick also predicted that in the next decade the number of young people who want to go to college will double. Despite these increases, he said, there are still large numbers of able students who do not obtain a college education.

Science News Letter, January 11, 1958

PHARMACOLOGY

Sleeping Pill Eliminates "Hangover"

➤ A SLEEPING drug claimed to be nonhabit forming and free from creating a "hangover" the morning after, was exhibited by Dr. Edwin Matlin, Carlisle Hospital, Carlisle, Pa., to the American Medical Association meeting in Philadelphia. The drug, chemically named glutethimide, has been tried experimentally in 500 patients who could not sleep.

It produced normal sleep within an average of 30 minutes.

One of the advantages of the drug is that it has a relatively short time of action, about five hours, so the insomniac awakes refreshed, with none of the cloudy "hangover" experienced with other sleep-inducing drugs.

The short acting time also allows a person to take a second pill a half hour later if he is still awake.

Another advantage is that the hypnotic effect of the drug does not diminish with continued use. This is a problem with other sleep-inducers which have to be stepped up in dosage to give the same results.

Glutethimide has been used for normal, insomnia, heart attack patients and surgical cases. When given after an operation, it cannot substitute for opiates but will reduce the amount of them that is needed, Dr. Matlin reported.

It has few undesirable side effects, excepting a skin rash and nausea which appeared in only one or two people out of a hundred.

Science News Letter, January 11, 1958

NCE FIELDS

SURGERY

Surgery Cases Can Go Back to Work Sooner

➤ GOING BACK to work after a surgical operation is many times postponed by a person's doctor for considerably longer than it has to be, Drs. N. Henry Moss, C. W. Schwegman and F. Curtis Dohan, University of Pennsylvania, told the American Medical Association meeting in Philadelphia.

In the last ten years, the amount of time spent in a hospital after surgery has been greatly reduced, but this does not hold true for the total convaiescent time.

The trouble is that no adequate criteria are available to guide doctors. After a post-operative patient gets home, his management is based upon "impression and vague concepts" instead of objective evidence.

In a nation-wide medical survey the physicians found that for the same type of uncomplicated surgery, an appendectomy, some doctors recommended convalescing for an average of 14 days, while others said it should be extended to 28 days.

Surgeons tended to recommend earlier return to work than industrial physicians and general practitioners, although there was a wide difference of opinion in each group.

The survey strongly suggested that physician "opinion" is the major reason for unnecessarily prolonged convalescence, they reported.

Recently military experience shows the time can be considerably shortened after common types of operations without creating any bad effects.

After appendectomies, otherwise healthy Air Force personnel in the 20 to 29 age group were safely put back on full duty after an average of 12 days.

The scientists also suggested a new data reporting plan for physicians that would help study the entire problem of convalescing.

Science News Letter, January 11, 1958

PHYSICS

Neutrino Found to Spiral In Left-Handed Manner

➤ THE NEUTRINO, an uncharged atomic ghost particle with a vanishingly small mass, has been found to spiral in a left-handed manner.

The first measurement of the neutrino's handedness, previously thought to be right, was reported to the American Physical Society meeting in Stanford, Calif., by Dr. M. Goldhaber of Brookhaven National Laboratory, Upton, N. Y.

The delicate experiments showing how the neutrino spirals were done in collaboration with Drs. Grodzins and A. W. Sunyar, also of Brookhaven. The elusive neutrino occurs when certain atomic nuclei disintegrate radioactively. It is then spinning in a direction such that it is described by a left-handed screw, meaning it is spinning counter-clockwise when moving away from the observer. Its spin direction, together with its direction of motion, define a handedness, now shown to be left.

The discovery that nature makes a distinction between left-handedness and right-handedness in certain cases, the non-conservation of parity, won the Nobel Prize in Physics for Drs. T. D. Lee of Columbia University and C. N. Yang of the Institute for Advanced Study, Princeton, N. J. (See SNL, Nov. 9, 1957, p. 293.)

Science News Letter, January 11, 1958

ASTRONOMY

Scientists Win Prize for Unique Sun Photographs

➤ THE COVETED Newcomb Cleveland Prize has been awarded to three scientists who took the first photographs of the sun above the earth's atmosphere.

It was awarded to them by the American Association for the Advancement of Science at its meeting in Indianapolis, Ind., as an "outstanding" contribution to science during the past year. Receiving the $1,000 prize were Drs. Martin Schwarzschild and John B. Rogerson Jr. of Princeton University Observatory, and Dr. W. Evans, director of the Sacramento Peak Observatory.

The photographs showed the sun's surface has a highly cellular appearance, with individual eddies as small as 150 miles in diameter. (See SNL, Oct. 12, 1957, p. 227.)

The bright cells appear separated from each other by dark, often sharp, lines, the scientists reported to the American Astronomical Society, meeting with the AAAS.

Science News Letter, January 11, 1958

TECHNOLOGY

Darkroom Built Into Camera for Extra Prints

➤ A COMPLETE darkroom has been built into a camera by Waldemar A. Ayres, new-product consultant and designer, Fort Lauderdale, Fla.

The process and camera mechanism permit the immediate duplication of positive prints in the camera itself.

According to Mr. Ayres, a photographer can take a picture, develop it to produce a positive print in the camera and then place the print back in the camera as a "master picture" to make an infinite number of duplicate prints. The duplicate prints are made from unexposed film in the camera roll.

The developing of extra prints takes 60 seconds each, Mr. Ayres says, and the process itself requires no special technical knowledge.

In addition to providing duplicates, the process and mechanism have been used successfully to make black and white duplicate prints from color transparencies and color opaque prints.

Science News Letter, January 11, 1958

PHYSIOLOGY

Stomach Windows Show Insides of Fish

➤ A STOMACH window made of mica and screwed on the side of a fish to watch its internal organs at work is reported by G. Burnstock, King's College, London, England, in *Nature* (Dec. 28, 1957).

The window technique allows close observations to be made of the gut of fish which are still living and feeding under normal conditions instead of the artificial conditions existing when organs are isolated from the body.

The fish is first anesthetized, a section of the body cavity is opened, and then a window of mica is fitted over the opening to make an airtight seal. Small bolts going through the back of the fish hold the window on.

Pike make good "window" fish because they lay very still for long periods of time and a microscope can be focused on the internal organs to watch them in action.

Science News Letter, January 11, 1958

PSYCHOLOGY

Old and New Drugs Show How Brain Works

➤ THE BASIS of human behavior and personality is being explored by psychologists who aim at understanding so-called normal people as well as curing the mentally disturbed. Old and new drugs are being used both to treat disorders and to determine first in animals and then in humans just how the brain works.

At the American Association for the Advancement of Science meeting in Indianapolis, Ind., Dr. Roger W. Russell, executive secretary of the American Psychological Association, Washington, declared that the relations between drugs and their behavioral effects is far from complete until the mechanisms by which the drugs act have been determined.

As a result of his research at University College, London, Dr. Russell reported what happens when drugs alter the level of a brain chemical, called cholinesterase, which is essential in events associated with nerve activity. When cholinesterase activity is reduced, first there are no significant effects, then there is improved performance, then rapid loss in efficiency or "behavioral toxicity," and finally bodily toxicity ending in convulsions and death.

From such research scientists can determine which drugs to use upon mentally ill patients on the basis of specific knowledge rather than on a cut-and-try basis.

The new interest in drug effects, following the widespread use of the tranquilizing drugs in mental hospitals and among the general public, will allow basic clarification of some problems in learning, motivation, perception and sensory processes, Dr. Sherman Ross, University of Maryland psychologist, predicted.

Science News Letter, January 11, 1958

GENERAL SCIENCE

Brussels Fair and Science

Emphasis of the first world's fair in almost two decades will be on science and its peaceful uses. The United States will display many of its latest scientific achievements.

By HOWARD SIMONS

➤ ON APRIL 17, 1958, the first World's Fair in nearly 20 years will open in Brussels, Belgium.

Its emphasis, reflecting both the times and the great changes that have taken place in the world since before World War II, will be on science. Specifically, the peaceful uses of man's inventions, developments, discoveries and improvements.

Dominating the fair grounds will be a giant, 360-foot structure called the Atomium. Shaped to resemble the arrangement of atoms in an elementary crystal of metal, the Atomium promises to symbolize the Brussels' Fair in much the same way the still familiar Trylon and Perisphere came to symbolize the last great World's Fair held in New York in 1939.

Atomium: Symbol of Faith

The atomic structure is made up of nine spheres, each 59 feet in diameter and each connected to the other by tubes 10 feet in diameter and housing escalators or traveling belts. Some of the spheres, soundproofed and air-conditioned, will be used to display the peaceful uses of the atom.

The silvery spheres will reflect the sun, sky and clouds during the day. At night, playing lights will cause them to simulate the rotations of electrons around the nucleus of the atom.

The Fair's theme, as symbolized by the Atomium, has been set as "a declaration of faith in man's ability to mold the atomic age to the ultimate advantage of all nations and people."

Those responsible for the Brussels event have been very careful to weave this theme into every aspect of the Fair's design, construction and purpose, from the individual buildings of each group to the International Gardens, musical events, film festival and International Science Pavilion. They have insisted on stressing peace and lessening the display of national interests or having the Fair used as a propaganda area.

In all, 48 nations, seven international or supra-national organizations such as the Red Cross, the European Coal and Steel Community and the Vatican, and private industry will be represented on the 500 acres of Heysel Park, four miles from the heart of Brussels.

There will be big exhibits, like the two and one-half acre International Science Pavilion, and there will be small exhibits, like the American-made machine for answering historical questions in any one of 10 languages by dialing a phone-like device. In keeping with the international flavor of the Fair, this same device will also employ as one of its languages Interlingua, an international language based on the words and grammar of the predominant European languages. Interlingua, a function of SCIENCE SERVICE, can be read without study or preparation by most visitors.

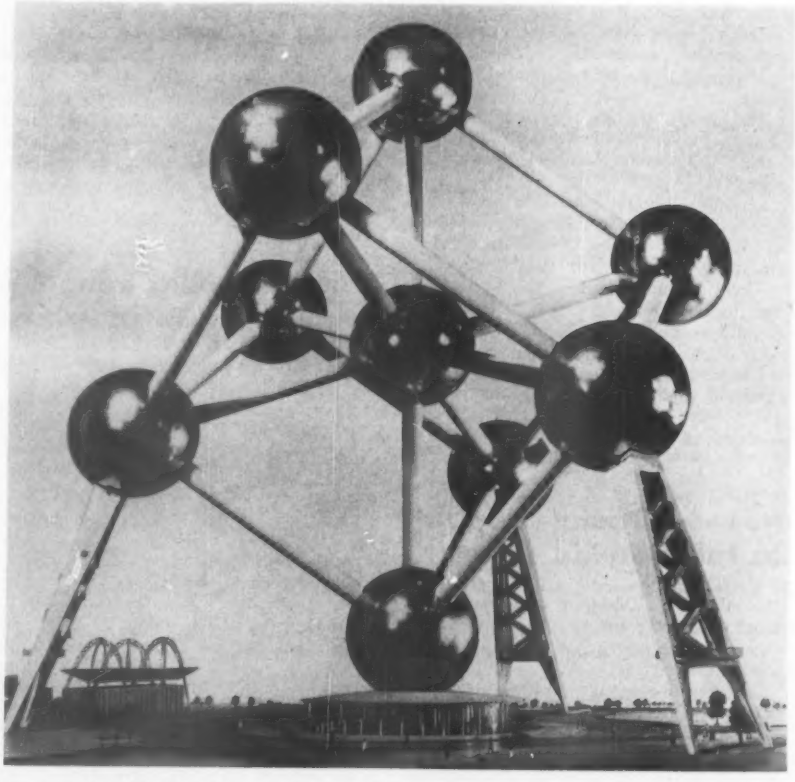
Science Museum

Sixteen nations are collaborating in the exhibits making up the International Science Pavilion whose guiding principle is that "at the level of pure science there are no confines; scientists speak the same language; they are objective and disinterested. Science belongs to man."

The Pavilion will be a museum created to show the progress which has been accomplished within the last 25 years. To do this, it has been divided into four divisions —the atom, the molecule, the crystal, the living cell—representing physics, chemistry, solid state physics and biology.

Upon entering the Pavilion, a visitor will first see a 20-minute movie ranging in its scope from human biology to atomic physics. It may be heard in English, Spanish, French or Dutch as desired through the use of multilingual earphones. After the film, the visitor is free to wander about the exhibit divisions, to see the displays contributed by each of the 16 nations.

The United States' effort for the Pavilion has been arranged by a brilliant array of our top scientists, including several Nobel Prize winners. In the atom class, for example, we will show exhibits demonstrating solar energy, particle accelerators, anti-protons and anti-neutrons, as well as showing a swimming pool reactor. In the molecule class we will demonstrate the recombination of atoms, organo-metallics and antibiotics. In the crystal class will be shown energy levels of atoms in condensed matter, nucleation of snow crystals and solar batteries, together with transistors, to name a few. In the living cell class, U. S. exhibits will show cell nutrition, photosynthesis, genetics of simple organisms such as bac-



THE ATOMIUM—Dominating the Brussels World's Fair will be this 360-foot Atomium designed to represent the peaceful uses of the atom. The 59-foot spheres are inter-connected by escalators and some of them will house displays.

teria and yeasts, and cell-to-cell relations.

These exhibits, together with the others, have not been made particularly simple.

"The aim in view," Baron Moens de Fernig, commissioner-general of the Belgian Government, said, "is to compare rather than to popularize. While it is desirable that simple minds should be given a less complicated idea of the significance of various phenomena, it is essential that specialists, scientists and scholars who visit the 'International Science Pavilion' shall find there the means to enrich their knowledge . . ."

The Pavilion and the Atomium are not the only Fair areas that will have science exhibits, although it is at these two places that science will be featured exclusively. Each of the national and international buildings will touch upon scientific aspects in displaying their national life and culture.

The Fair will consist of four major areas for displays by participating nations and organizations: the Belgian section depicting Belgian national life; the Congo and Ruanda-Urundi Section presenting a panorama of life in Belgium's African possessions; the Foreign sections containing the national pavilions; and the international exhibitions devoted to science and the arts.

Rivalry at the Fair

It is rather unfortunate that the Brussels' World's Fair should take place in as war-jittery an atmosphere as did the New York World's Fair in 1939. Although its aims and ambitions are to lessen national rivalry, it is impossible to erase it completely. Both the U.S. and U.S.S.R. will be exhibiting at the Fair. It is inevitable, therefore, that the displays of the two will be compared by many. This is especially true in the light of the science rivalry generated by the launching of the sputniks.

It is particularly unfortunate for the U.S. scientific effort because the funds to support it were granted by the Congress in pre-sputnik days. This fact has had its consequences. The American scientific exhibits will be as good as they possibly can be with the funds granted.

As it now stands, a good share of our exhibits will be well-constructed wall charts. Many of the working models planned as exhibits had to be scrapped when the appropriations asked for by the National Science Foundation were turned down.

One criticism appearing as an editorial in *Science* points out that there are still some salvage possibilities. The science exhibits could be supplemented with a two-hour program of top-quality science motion pictures. The wall charts could be replaced by the originally planned operating models.

American industry has jumped into the picture to help the U. S. science effort, knowing that the Fair regulations "exclude any presentation having a purely national character or commercial or advertising aspect of any kind." Drug firms, for example, have designed, built and contributed the exhibit on antibiotics.

In this respect, the U. S. participation has a lead on the Russians, for it will be impossible for the Russians to boast the same—where there is no private industry to help.

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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

ANATOMIES OF PAIN—K. D. Keele—*Thomas, C. C.*—206 p., illus., $5.50. Changing ideas on the anatomical and physiological basis of pain since the most ancient medicine.

APPLICATION OF DEMOGRAPHY; THE POPULATION SITUATION IN THE U. S. IN 1975—Donald J. Bogue, Ed.—*Scripps Foundation for Research in Population Problems* and *Population Research and Training Center*, 96 p., illus., paper, $2.10. To help businessmen and others to plan for the near future.

ARAUCANIAN CHILD LIFE AND ITS CULTURAL BACKGROUND—Sister M. Inez Hilger—*Smithsonian*, 439 p., illus., $7. Report of a study of the life of a present-day people in Chile and Argentina.

BIRDS FROM NEPAL—Austin L. Rand and Robert L. Fleming—*Chicago Natural History Museum*, Fieldiana: Zoology, Volume 41, Number 1, 218 p., illus., paper, $3.50. Dealing with collections made by the junior author between 1949 and 1954.

CALIFORNIA THROUGH THE AGES: The Geologic Story of a Great State—William J. Miller—*Westernlore*, 264 p., illus., $6.50. California has such geologic wealth that this description is almost a primer of the science.

CHEMISTRY OF THE RARE RADIOELEMENTS: Polonium-Actinium—K. W. Bagnall—*Academic*, 177 p., illus., $5. The six elements covered are scarcely mentioned in standard textbooks.

THE DISTRIBUTION OF PLUTONIUM IN THE SOILS OF CENTRAL AND NORTHEASTERN NEW MEXICO AS A RESULT OF THE ATOMIC BOMB TEST OF JULY 16, 1945—J. H. Olafson, H. Nishita and K. H. Larson—*Office of Technical Services*, 25 p., mimeo., paper, 75¢. Plutonium was found 28 miles northeast of the detonation site but only three miles south.

ENCYCLOPEDIA OF CHEMICAL TECHNOLOGY: First Supplement Volume—Raymond E. Kirk and Donald F. Othmer, Eds.—*Interscience*, 974 p., illus., $25. Containing 51 articles on recent noteworthy developments in the field.

THE FUNDAMENTALS OF X-RAY AND RADIUM PHYSICS—Joseph Selman—*Thomas, C. C.*, 2d ed., 347 p., illus., $8.50. For student X-ray technicians and radiology residents.

HEAT—Alexander Efron—*Rider*, 105 p., illus., paper, $1.50. Basic science for the general reader.

THE HUNDRED FINEST TREES AND SHRUBS FOR TEMPERATE CLIMATES: A Handbook—Peter K. Nelson, Ed.—*Brooklyn Botanic Garden*, Special Issue of Plants & Gardens, 80 p., illus., paper, $1. The living "Rembrandts" of the world of woody plants.

INSECT FLIGHT—J. W. S. Pringle—*Cambridge Univ. Press*, 133 p., illus., $3. Dealing with the subject from a functional and physiological point of view.

INTEGRATING DEVICE FOR USE WITH POTENTIOMETERS—W. Keith Hall, Gustave Sill and Court L. Wolfe—*Mellon Institute*, 3 p., illus., paper, free upon request direct to publisher, 4400 Fifth Ave., Pittsburgh 13, Pa.

AN INTRODUCTION TO METHOD IN PSYCHOLOGY—W. M. O'Neil—*Melbourne Univ. Press (Cambridge Univ. Press)*, 155 p., $4.50. Telling the beginner how psychological research is conducted.

THE MACMILLAN WORLD GAZETTEER AND GEOGRAPHICAL DICTIONARY—T. C. Collocott and J. O. Thorne, Eds.—*Macmillan*, rev. ed., 793 p., $6.95. Places in the world arranged alphabetically for easy reference.

MARRIAGE AND PERSONALITY: A Psychiatric Study of Inter-Personal Reactions for Student and Layman—Ainslie Meares—*Thomas, C. C.*, 157 p., $3.95. Neither guide to happy marriage nor sex book, this work gives an account of the factors of personality and how they operate in marriage.

MERCURY TOXICITY: A Bibliography of Published Literature—Compiled by Hugh E. Voress and Naomi K. Smelcer—*Office of Technical Services*, 52 p., paper, $1.50. Containing 1,676 references.

MUSEUMS AND OUR CHILDREN: A Handbook and Guide for Teachers in Museums and Schools and for All Who Are Interested in Programs of Activity for Children—Charles Russell—*Central Book Co.* 338 p., illus., $6. Of particular interest to science teachers.

OF MEN AND MARSHES—Paul L. Errington—*Macmillan*, 150 p., illus. with drawings by H. Albert Hochbaum, $4.50. Telling what the wet spots of the country offer besides ducks and muddy feet.

PRINCIPLES OF THE PROPERTIES OF MATERIALS—Jacob Porter Frankel—*McGraw-Hill*, 228 p., $6. Putting the emphasis on properties rather than on materials.

RADIOLOGICAL PHYSICS—M. E. J. Young—*Academic*, 365 p., illus., $7.50. A short text for medical students.

RECOVERY FROM SCHIZOPHRENIA: The Roland Method—John Eisele Davis—*Thomas, C. C.*, 162 p., $4.75. Describing a method of treatment specially devised for the far-regressed, chronic patients who do not respond to conventional treatments.

A SCIENTIFIC VOCABULARY FOR BEGINNING ZOOLOGY STUDENTS AND NON-SCIENTIFIC STUDENTS—Mary J. Brown—*Pageant*, 104 p., $3. Zoology terms defined from Abductor to Zymogen.

SOUND—Alexander Efron—*Rider*, 72 p., illus., paper, $1.25. Basic science in readable form.

TEXTILE CHEMICALS AND AUXILIARIES: With Special Reference to Surfactants and Finishes—Revised and edited by Henry C. Speel and E. W. K. Schwarz—*Reinhold*, 2d ed., 545 p., illus., $13.50. The textile industry is the country's most important consumer of industrial chemicals.

THERMAL STRESSES: With Applications to Airplanes, Missiles, Turbines and Nuclear Reactors—B. E. Gatewood—*McGraw-Hill*, 232 p., $7.50. Covering the design problem at elevated temperatures.

UNDERSTANDING YOUR PATIENT—Samuel Liebman, Ed.—*Lippincott*, 170 p., $5. Intended to be of practical help to the physician in recognizing emotional problems and handling them.

VISUALIZED PHYSICS—Alexander Taffel—*Oxford Book Co.*, rev. and enl. ed., 408 p., illus., paper, 85¢, cloth $1.60. A high school text.

Science News Letter, January 11, 1958

PHYSIOLOGY

Device Permits Look Inside Human Heart

See Front Cover

➤ A DEVICE called the Moody cardiac pulse duplicator, invented by G. Keith Hargett of the Moody Institute of Science, Los Angeles, Calif., enables scientists to study the human heart's action under controlled conditions.

The photograph on the cover of this week's SCIENCE NEWS LETTER is an internal view looking out through the mitral valve "chordae tendinae" which act to keep the valve leaves in their proper closed position.

Science News Letter, January 11, 1958

RAPID CALCULATIONS

by A. H. Russell

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GENERAL SCIENCE

More New Science Fairs To Find Young Scientists

➤ FOURTEEN new regional science fairs have joined the National Science Fair and at least 20 more are planning to do so.

They will join 122 other regional and state fairs which will be sending their top winners to the National Science Fair in Flint, Mich., May 7-10, for nation-wide recognition.

While the country's experts consider ways to discover and encourage more young scientists, thousands of youngsters are finding their own way. They are investigating everything under and including the sun and demonstrating their answers in colorful and dramatic exhibits for their local science fairs.

As more and more schools hold fairs, more regional fairs are organized to serve as focal points and meeting grounds for local fairs in their areas. An increasing number of these large fairs are becoming a part of the annual national competition coordinated by SCIENCE SERVICE and planned as a mutually rewarding opportunity for high school-aged scientists, teachers, sponsors and professional scientists.

Among the largest of the new fairs will be the Harrisburg, Pa., Fair and the Metropolitan Detroit Science Fair, both sponsored by many top industries and community organizations. The Detroit fair will provide space for 2,000 exhibits at the Michigan State Fair Grounds. The mayor of Detroit, Albert E. Cobo, is honorary chairman and James C. Zeder, vice-president of the Chrysler Corporation, is chairman. Twenty-five top educators, industrialists and professional people are on the executive committee of the fair.

Other recently affiliated fairs include Atlanta, Ga.; Hammond, Ind.; Monroe, La.; Lowell, Mass.; Lansing, Mich.; Grand Rapids, Mich.; Cape Girardeau, Mo.; Minot, N.D.; Teaneck, N.J.; Plattsburgh, N.Y.; Reading-Bucks County, Pa.; and Colorado-Wyoming.

Science News Letter, January 11, 1958

Questions

ASTRONOMY—How high above the earth's surface did radar tests show Southern Hemisphere auroras to be? p. 19.

CHEMISTRY—What are examples of an explosive and a rapid-burning fuel? p. 20.

MEDICINE—What relationship does histamine appear to have with respect to radiation damage to tissue? p. 23.

PHYSICS—What does the physicist mean by "handedness"? p. 25.

Photographs: Cover, Moody Institute of Science; p. 19, The Smithsonian Institution; p. 23, National Science Foundation; p. 26, Brussels Fair Photo; p. 32, Eastman Chemical Products, Inc.

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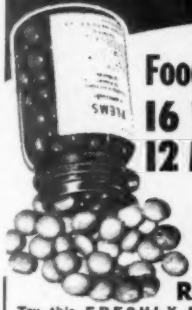

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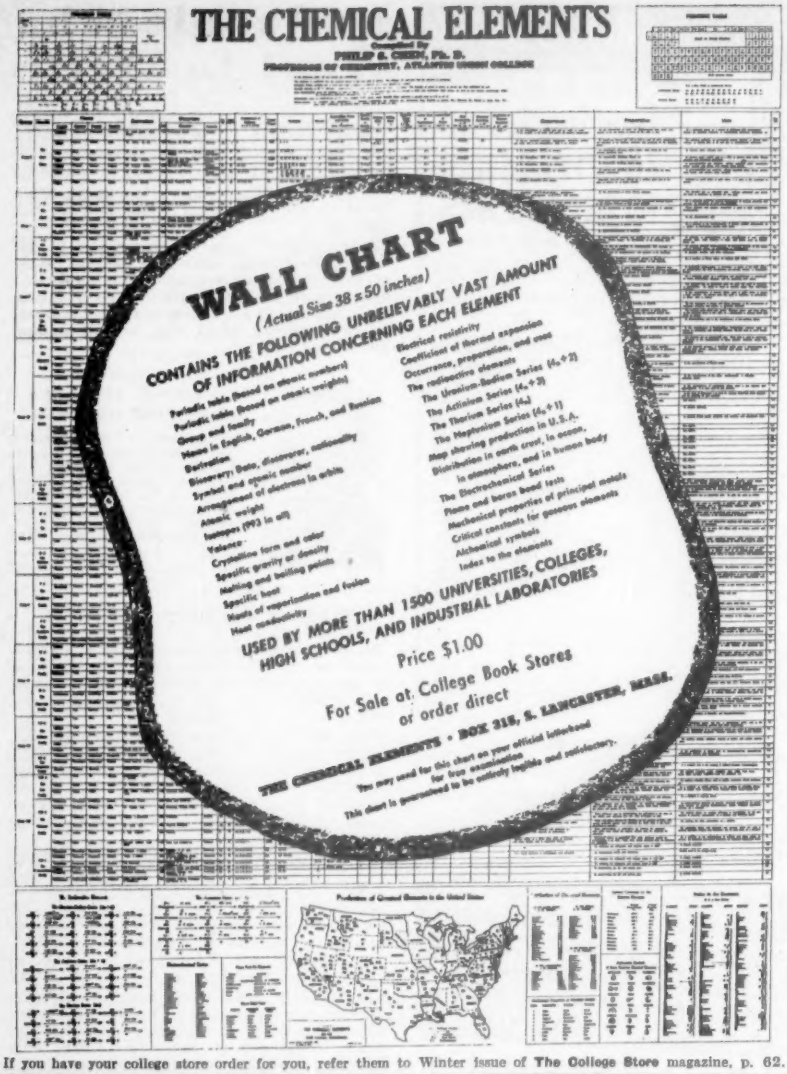
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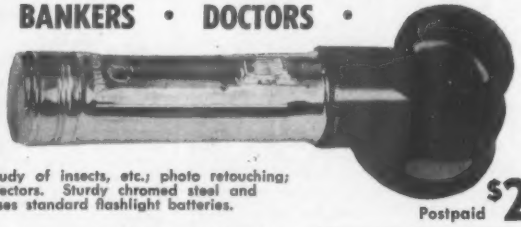

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MEDICINE

Dieting Drug Causes No Jumpiness

➤ A DIETING drug that creates an average weight loss of two pounds a week without making the dieter jumpy was exhibited to the American Medical Association meeting in Philadelphia.

The drug is an appetite-depressant called Levonor and is available by prescription only. It has absolutely no side effects, is inexpensive, and can be used by virtually all dieters, Dr. Raymond J. Gadek, New York Medical College, New York, one of the exhibitors, said.

The drug is the nearest thing yet to the ideal appetite-depressant, Dr. Gadek told SCIENCE SERVICE. Its great advantage is that it has no stimulating effect on the central nervous system, a condition found with all the other similar drugs now on the market. It diminishes hunger without cutting it out completely and is particularly useful for late television viewers who cannot resist the urge to nibble.

Associated with Dr. Gadek in the studies on the drug were Drs. Harold S. Feldman and Ralph Lucariello. Levonor is produced by Nordmark Pharmaceutical Laboratories, Irvington, N. J.

Science News Letter, January 11, 1958

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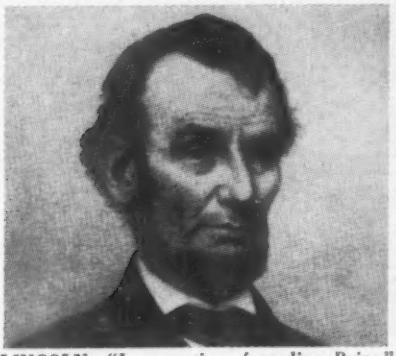
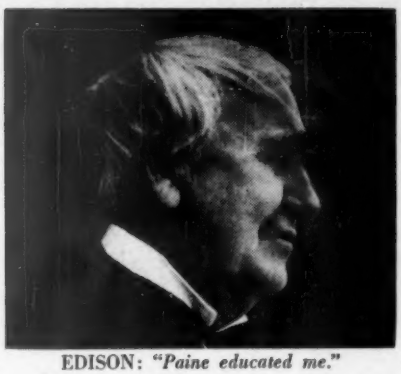


LINCOLN: *"I never tire of reading Paine."*



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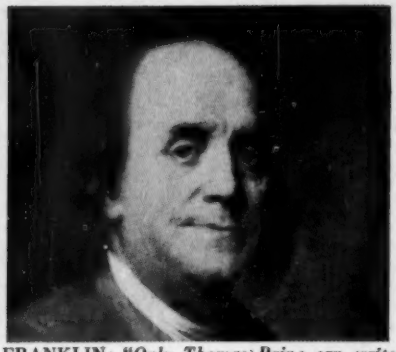

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There has also been added to this book three addresses delivered by Joseph Lewis on Thomas Paine. They are the address dedicating the Thomas Paine Statue in Paris, France, entitled "Thomas Paine—World Citizen"; the address dedicating the Thomas Paine Statue in Morristown, New Jersey, entitled "Thomas Paine and the American Crisis"; the address dedicating the plaque in New Rochelle, New York, marking the site where the Author of "Common Sense" and "The Age of Reason" was buried, entitled "The Resurrection of Thomas Paine."

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- ☐ Thomas Paine, Author of the Declaration of Independence (15,000 sold) $3.00
- ☐ Ingersoll, the Magnificent (flexible leather binding) $5.00

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New Machines and Gadgets

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE SERVICE, 1719 N St., N.W., Washington 6, D. C., and ask for Gadget Bulletin 917. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

LABORATORY FURNACE can be used in the determination of carbon, hydrogen, sulfur, fluorides and oxygen. The furnace operates over a temperature range of from 150 to 1,130 degrees centigrade. It is fourteen inches long, nine and one-quarter inches wide and six and one-half inches high.

Science News Letter, January 11, 1958

AUTO LIGHT SWITCH keeps your headlights on long enough for you to walk 200 feet and then shuts them off automatically. The switch, which does not interfere with the operation of the regular light switch, can be made to control headlights, back-up lights or a spot light. It can be installed on any make car or truck.

Science News Letter, January 11, 1958

WOOD SEALER eliminates the need for added use of filler on raw, close grained woods. Drying in less than 20 minutes, the sealing is said to be waterproof, nonslippery and able to withstand alcohol, scrubbing and scuffing.

Science News Letter, January 11, 1958

PLASTIC NIBS for artists and draftsmen are arranged on a palette, shown in the photograph, for quick and handy use.

The threaded nibs, each of which holds a steel point, screw into the matching pen holder. The interchangeable, butyrate plastic nibs are available in different colors.

Science News Letter, January 11, 1958

PREFINISHED PLYWOOD PANELING boasts a surface of plastic vinyl resins for protection. Nine panels, in a choice of oak, mahogany, birch or walnut, can cover 12 feet of wall to an eight-foot height. The prefinished panels are ready to put in place or can be cut and planed as desired. They are washable.

Science News Letter, January 11, 1958

DINOSAUR TRACK is a reproduction of an impression left by an Anchisaur some 170,000,000 years ago. The 10-inch track is made of plastic and retained in a gum frame. A printed legend with a drawing and brief history of the Anchisaur is attached to the back of the frame.

Science News Letter, January 11, 1958

METAL SHELVING UNITS can be hung on any door or wall of the house. Flexible, the individual shelf can also be tailored to fit any door and the shelf height adjusted to needs. The metal shelves are available in kits for almost any room or area in the house.

Science News Letter, January 11, 1958

TELEPHONE LOCK prevents unauthorized telephone calls without interfering with incoming ones. Made of a black phenolic plastic, the lock is designed to fit all Bell system phones. It cannot be removed from the telephone without the use of a key.

Science News Letter, January 11, 1958

Nature Ramblings

By HORACE LOFTIN

THERE IS one word that sums up the insects: prodigious!

According to Webster, this means "extraordinary in bulk, quantity or degree." Insects fit all these categories and more.

Take their size, for example. The smallest insects are approximately 1/100 of an inch in length, while the largest are more than eight inches long. Wingspread may be only 1/50 of an inch, but some long extinct dragonflies had wingspreads of over two feet. Some tropical beetles have a body as large as a man's fist.

Take their quantity. In terms of individuals, there may be millions of insects to the acre. In terms of numbers of species, several hundred thousand different kinds of insects are known to science, probably three times the total of all other animal species.

Reproductively, they are prodigious. The common fruit fly, for instance, may produce

Insect Prodigies

as many as 25 generations in a single year, with about 100 young per generation (half male, half female). Assume that all these offspring and their descendants lived and reproduced themselves at the same rate. In one year, all the descendants of the original parents, packed together 1,000 to an inch, would form a ball 96,000,000 miles in diameter!

With this in mind, we can be thankful that certain insects have prodigious appetites! The chief enemies of insects are other insects, those that feed on eggs, young and adults of their neighbors. Actually, the amount of predation, the hazards of weather and competition for food is so great that only the minutest fraction of insect eggs laid ever lead to adult insects.

The appetite we spoke of, along with their great numbers, calls for a prodigious range of foods if all are to be fed. Many are strictly vegetarians, even specializing on the part of the plant they eat. Some chew their food, others suck the plant juices with specialized mouthpieces. The meat-eaters among the insects range from cannibals through feeders on human beings.

In this quantitative sense, the insects can well be considered to be the dominant group of animals on earth. In a very real way, they present a constant challenge to man, who considers himself the regent of the animal kingdom. At best, we have merely learned to coexist with the prodigious insects!

Science News Letter, January 11, 1958